

No.

200000049



# THE UNITED STATES OF AMERICA

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**

**Syngenta Seeds, Inc. - Vegetables**

**Whereas**, THERE HAS BEEN PRESENTED TO THE

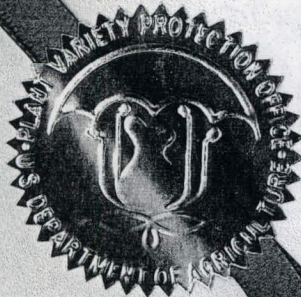
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN, GARDEN

'Mercury'



*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirteenth day of November, in the year two thousand two.*

*Attest:*

*[Signature]*

Acting Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*[Signature]*

Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following state-ments are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER <b>Syngenta</b> <b>NOVARTIS SEEDS, INC. - Vegetables</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME <b>SB4136</b>		3. VARIETY NAME <b>MERCURY</b>	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)  <b>600 North Armstrong Pl. Boise, ID 83704</b>		5. TELEPHONE (include area code) <b>(208) 32707246</b>		<b>FOR OFFICIAL USE ONLY</b>  <b>PVPO NUMBER</b> <b>00000497</b>  <b>FILING DATE</b> <b>Nov 3, 1999</b>	
		6. FAX (include area code) <b>(208) 378-6625</b>			
7. IF THE OWNER NAMED IS NOT A "PERSON". GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.)  <b>Corporation</b>		8. IF INCORPORATED, GIVE STATE OF INCORPORATION  <b>Delaware</b>		9. DATE OF INCORPORATION  <b>2/25/75</b>	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers)  <b>Charleen Orthel 600 North Armstrong Pl. Boise, ID 83704</b>				<b>FILING AND EXAMINATION FEES:</b> <b>\$ 2450<sup>00</sup></b> <b>DATE Nov. 3, 1999</b> <b>CERTIFICATION FEE:</b> <b>\$ 320<sup>00</sup></b> <b>DATE 5/16/02</b>	
11. TELEPHONE (Include area code)  <b>(208) 327-7246</b>		12. FAX (Include area code)  <b>(208) 378-6625</b>		13. E_MAIL <b>charleen.orthel@seeds. novartis.com</b>	
14. CROP KIND (Common Name)  <b>Beans Garden</b>		15. GENUS AND SPECIES NAME OF CROP  <b>Phaseolus vulgaris L.</b>		16. FAMILY NAME (Botanical)  <b>Fabaceae</b>	
17. IS THE VARIETY A FIRST GENERATION HYBRID?  <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
<input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) <input type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no," go to item 22)  20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO  21. IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED			
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?  <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)?  <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			
24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER  <b>Charleen Orthel</b>			SIGNATURE OF OWNER		
NAME (Please print or type)  <b>Charleen Orthel</b>			NAME (Please print or type)		
CAPACITY OR TITLE  <b>Customer Qlty. Mgmt. Coord.</b>		DATE  <b>10/29/99</b>		CAPACITY OR TITLE  <b>DATE</b>	



# INSTRUCTIONS

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filing fee and \$2,150 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$300 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

## ITEM

- 18a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
  - (2) the details of subsequent stages of selection and multiplication;
  - (3) evidence of uniformity and stability; and
  - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
  - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
  - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See *Regulations and Rules of Practice, Section 97.103*).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

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22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

10/98 TRIALS USA

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23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

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**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705. Telephone: (301) 504-8089.

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Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

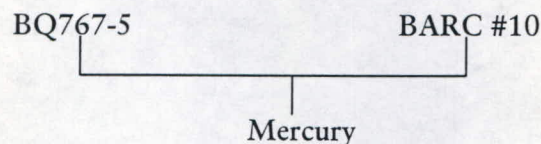
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S&T-470 (6-98) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (03-96) which is obsolete.



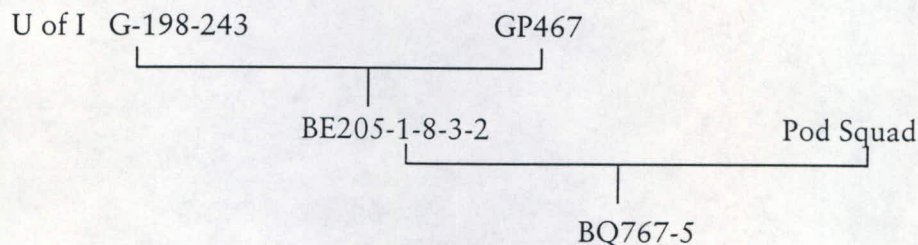
200000049

EXHIBIT A  
ORIGIN AND BREEDING HISTORY  
'MERCURY'



The pedigree trace of 'Mercury' is shown above. 'Mercury' originated from the hand-pollinated cross made in 1988 between the Novartis Seeds, Inc. breeding line BQ767-5 and the USDA, rust resistant breeding line BARC #10.

The pedigree of BQ767-5 is shown below. BE205-1-8-3-2 is a Novartis Seeds, Inc. breeding line and 'Pod Squad' is an Asgrow Seed Co. variety. BE205-1-8-3-2 was derived from the cross between the University of Idaho curly top virus tolerant line G-198-243 and the Novartis Seeds, Inc. breeding line GP467. The origin of GP467 has been lost.



The pedigree selection method of breeding was employed from F2 – F5. Earlier than 'Strike', heat tolerance, rust resistance, and acceptable fresh market pod traits were the selection criteria.

The F6 generation plant row was bulk harvested in 1993 to begin seed increases and trialing stock. There have been no off-types or variants found in two subsequent seed increase lots derived from the original bulk harvest. The breeders seed and stock seed lot resulting from these two increases was released in 1995. Two flat pod off-types have been rogued from two different trial lots produced from the original bulk harvest. 'Mercury' is known to be extremely homogeneous and stable.



Amended 4/15/02;

'Mercury' was observed during three generations (F6-F8) to be stable and uniform.



## EXHIBIT B

## NOVELTY STATEMENT

## 'Mercury'

'Mercury' is a fresh market shipper type snap bean that most closely resembles the variety 'Strike'. 'Mercury' differs from 'Strike' in the following traits;

1. Plant height (cm) of 'Mercury' is significantly shorter than 'Strike'. See attachments.
2. Plant spread (cm) of 'Mercury' is significantly narrower than 'Strike'. See attachments.



## EXHIBIT B

## NOVELTY STATEMENT

'Mercury'

Explanation of abbreviations for statistical analysis variables.

PHMERID	Plant height, Mercury, Idaho
PHSTRID	Plant height, Strike, Idaho
PHMERMN	Plant height, Mercury, Minnesota
PHSTRMN	Plant height, <del>Mercury, Minnesota</del> <i>Strike, Minnesota</i>
PHMERCO	Plant height, Mercury, Combined data (Idaho + Minnesota)
PHSTRCO	Plant Height, Strike, Combined data (Idaho + Minnesota)

*mah*  
*4/27/04*

PSMERID	Plant spread, Mercury, Idaho
PSSTRID	Plant spread, Strike, Idaho
PSMERMN	Plant spread, Mercury, Minnesota
PSSTRMN	Plant spread, Strike, Minnesota
PSMERCO	Plant spread, Mercury, Combined data (Idaho + Minnesota)
PSSTRCO	Plant spread, Strike, Combined data (Idaho + Minnesota)



## DESCRIPTIVE STATISTICS

2000000497

	PHMERID	PHSTRID
N	20	20
MEAN	41.200	47.500
SD	4.5143	4.6960
VARIANCE	20.379	22.053
C.V.	10.957	9.8864
MINIMUM	33.000	38.000
MAXIMUM	51.000	55.000

Attachment B-1A

Plant height (cm)  
Descriptive Statistics  
"Mercury" vs. "Strike"  
Nampa, Idaho  
1998



ONE-WAY AOV FOR: PHMERID PHSTRID

200000049

SOURCE	DF	SS	MS	F	P
BETWEEN	1	396.900	396.900	18.71	0.0001
WITHIN	38	806.200	21.2158		
TOTAL	39	1203.10			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	0.03	1	0.8652

COCHRAN'S Q	0.5197
LARGEST VAR / SMALLEST VAR	1.0821

COMPONENT OF VARIANCE FOR BETWEEN GROUPS	18.7842
EFFECTIVE CELL SIZE	20.0

VARIABLE	MEAN	SAMPLE SIZE	GROUP STD DEV
PHMERID	41.200	20	4.5143
PHSTRID	47.500	20	4.6960
TOTAL	44.350	40	4.6061

CASES INCLUDED 40 MISSING CASES 0

Attachment B-1B

Plant height (cm)  
AOV"Mercury" vs. "Strike"  
Nampa, Idaho  
1998



## LSD (T) COMPARISON OF MEANS

200000049

VARIABLE	MEAN	HOMOGENEOUS GROUPS
PHSTRID	47.500	I
PHMERID	41.200	.. I

ALL 2 MEANS ARE SIGNIFICANTLY DIFFERENT FROM ONE ANOTHER.

CRITICAL T VALUE	2.024	REJECTION LEVEL	0.050
CRITICAL VALUE FOR COMPARISON	2.9487		
STANDARD ERROR FOR COMPARISON	1.4566		

Attachment B-1C

Plant height (cm)  
Comparison of means  
"Mercury" vs. 'Strike'  
Nampa, Idaho  
1998



200000049

## DESCRIPTIVE STATISTICS

	PHMERMN	PHSTRMN
N	20	20
MEAN	36.100	39.950
SD	3.0245	2.6848
VARIANCE	9.1474	7.2079
C.V.	8.3780	6.7203
MINIMUM	32.000	35.000
MAXIMUM	44.000	46.000

Attachment B-1D

Plant height (cm)  
Descriptive Statistics  
"Mercury" vs. "Strike"  
Stanton, Minnesota  
1998



200000049

ONE-WAY AOV FOR: PHMERMN PHSTRMN

SOURCE	DF	SS	MS	F	P
BETWEEN	1	148.225	148.225	18.13	0.0001
WITHIN	38	310.750	8.17763		
TOTAL	39	458.975			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	0.26	1	0.6086

COCHRAN'S Q	0.5593
LARGEST VAR / SMALLEST VAR	1.2691

COMPONENT OF VARIANCE FOR BETWEEN GROUPS	7.00237
EFFECTIVE CELL SIZE	20.0

VARIABLE	MEAN	SAMPLE SIZE	GROUP STD DEV
PHMERMN	36.100	20	3.0245
PHSTRMN	39.950	20	2.6848
TOTAL	38.025	40	2.8597

CASES INCLUDED 40      MISSING CASES 0

Attachment B-1E

Plant height (cm)  
AOV

"Mercury" vs. "Strike"  
Stanton, Minnesota  
1998



## LSD (T) COMPARISON OF MEANS

200000049

VARIABLE	MEAN	HOMOGENEOUS GROUPS
PHSTRMN	39.950	I
PHMERMN	36.100	.. I

ALL 2 MEANS ARE SIGNIFICANTLY DIFFERENT FROM ONE ANOTHER.

CRITICAL T VALUE	2.024	REJECTION LEVEL	0.050
CRITICAL VALUE FOR COMPARISON	1.8307		
STANDARD ERROR FOR COMPARISON	0.9043		

Attachment B-1F

Plant height (cm)  
Comparison of means  
"Mercury" vs. "Strike"  
Stanton, Minnesota  
1998



## DESCRIPTIVE STATISTICS

200000049

	PHMERCO	PHSTRCO
N	40	40
MEAN	38.650	43.725
SD	4.5884	5.3732
VARIANCE	21.054	28.871
C.V.	11.872	12.289
MINIMUM	32.000	35.000
MAXIMUM	51.000	55.000

Attachment B-1G

Plant height (cm)  
Descriptive Statistics  
"Mercury" vs. "Strike"  
Combined Data (Idaho + Minnesota)  
1998



ONE-WAY AOV FOR: PHMERCO PHSTRCO

200000049

SOURCE	DF	SS	MS	F	P
BETWEEN	1	515.112	515.112	20.64	0.0000
WITHIN	78	1947.08	24.9625		
TOTAL	79	2462.19			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	0.96	1	0.3282

COCHRAN'S Q	0.5783
LARGEST VAR / SMALLEST VAR	1.3713

COMPONENT OF VARIANCE FOR BETWEEN GROUPS	12.2537
EFFECTIVE CELL SIZE	40.0

VARIABLE	MEAN	SAMPLE SIZE	GROUP STD DEV
PHMERCO	38.650	40	4.5884
PHSTRCO	43.725	40	5.3732
TOTAL	41.188	80	4.9962

CASES INCLUDED 80      MISSING CASES 0

Attachment B-1H

Plant height (cm)  
AOV

"Mercury" vs. "Strike"  
Combined Data (Idaho + Minnesota)  
1998



## LSD (T) COMPARISON OF MEANS

200000049

VARIABLE	MEAN	HOMOGENEOUS GROUPS
PHSTRCO	43.725	I
PHMERCO	38.650	.. I

ALL 2 MEANS ARE SIGNIFICANTLY DIFFERENT FROM ONE ANOTHER.

CRITICAL T VALUE	1.991	REJECTION LEVEL	0.050
CRITICAL VALUE FOR COMPARISON	2.2242		
STANDARD ERROR FOR COMPARISON	1.1172		

Attachment B-1I

Plant height (cm)  
Comparison of means  
"Mercury" vs. "Strike"  
Combined Data (Idaho + Minnesota)  
1998



## DESCRIPTIVE STATISTICS

200000049

	PSMERID	PSSTRID
N	20	20
MEAN	47.950	51.700
SD	5.6146	3.7148
VARIANCE	31.524	13.800
C.V.	11.709	7.1854
MINIMUM	39.000	44.000
MAXIMUM	59.000	57.000

Attachment B-2A

Plant spread (cm)  
Descriptive Statistics  
"Mercury" vs. "Strike"  
Nampa, Idaho  
1998



2000000491

ONE-WAY AOV FOR: PSMERID PSSTRID

SOURCE	DF	SS	MS	F	P
BETWEEN	1	140.625	140.625	6.21	0.0172
WITHIN	38	861.150	22.6618		
TOTAL	39	1001.77			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	3.07	1	0.0796

COCHRAN'S Q	0.6955
LARGEST VAR / SMALLEST VAR	2.2843

COMPONENT OF VARIANCE FOR BETWEEN GROUPS	5.89816
EFFECTIVE CELL SIZE	20.0

VARIABLE	MEAN	SAMPLE SIZE	GROUP STD DEV
PSMERID	47.950	20	5.6146
PSSTRID	51.700	20	3.7148
TOTAL	49.825	40	4.7604

CASES INCLUDED 40 MISSING CASES 40

Attachment B-2B

Plant spread (cm)  
AOV  
"Mercury" vs. "Strike"  
Nampa, Idaho  
1998



## LSD (T) COMPARISON OF MEANS

VARIABLE	MEAN	HOMOGENEOUS GROUPS
PSSTRID	51.700	I
PSMERID	47.950	.. I

200000049

ALL 2 MEANS ARE SIGNIFICANTLY DIFFERENT FROM ONE ANOTHER.

CRITICAL T VALUE	2.024	REJECTION LEVEL	0.050
CRITICAL VALUE FOR COMPARISON	3.0475		
STANDARD ERROR FOR COMPARISON	1.5054		

Attachment B-2C

Plant spread (cm)  
Comparison of means  
"Mercury" vs. 'Strike'  
Nampa, Idaho  
1998



## DESCRIPTIVE STATISTICS

200000049

	PSMERMN	PSSTRMN
N	20	20
MEAN	36.800	40.550
SD	2.8023	3.6487
VARIANCE	7.8526	13.313
C.V.	7.6148	8.9981
MINIMUM	31.000	34.000
MAXIMUM	43.000	47.000

Attachment B-2D

Plant spread (cm)  
Descriptive Statistics  
"Mercury" vs. "Strike"  
Stanton, Minnesota  
1998

ONE-WAY AOV FOR: PSERMN PSSTRMN

20000049

SOURCE	DF	SS	MS	F	P
BETWEEN	1	140.625	140.625	13.29	0.0008
WITHIN	38	402.150	10.5829		
TOTAL	39	542.775			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	1.28	1	0.2588

COCHRAN'S Q	0.6290
LARGEST VAR / SMALLEST VAR	1.6954

COMPONENT OF VARIANCE FOR BETWEEN GROUPS	6.50211
EFFECTIVE CELL SIZE	20.0

VARIABLE	MEAN	SAMPLE SIZE	GROUP STD DEV
PSERMN	36.800	20	2.8023
PSSTRMN	40.550	20	3.6487
TOTAL	38.675	40	3.2531

CASES INCLUDED 40 MISSING CASES 40

Attachment B-2E

Plant spread (cm)  
AOV"Mercury" vs. "Strike"  
Stanton, Minnesota  
1998



20000049

## LSD (T) COMPARISON OF MEANS

VARIABLE	MEAN	HOMOGENEOUS GROUPS
PSSTRMN	40.550	I
PSMERMN	36.800	.. I

ALL 2 MEANS ARE SIGNIFICANTLY DIFFERENT FROM ONE ANOTHER.

CRITICAL T VALUE	2.024	REJECTION LEVEL	0.050
CRITICAL VALUE FOR COMPARISON	2.0826		
STANDARD ERROR FOR COMPARISON	1.0287		

Attachment B-2F

Plant spread (cm)  
Comparison of means  
"Mercury" vs. 'Strike'  
Stanton, Minnesota  
1998

## DESCRIPTIVE STATISTICS

200000049

	PSMERCO	PSSTRCO
N	40	40
MEAN	42.375	46.125
SD	7.1457	6.7147
VARIANCE	51.061	45.087
C.V.	16.863	14.558
MINIMUM	31.000	34.000
MAXIMUM	59.000	57.000

Attachment B-2G

Plant spread (cm)  
Descriptive Statistics  
"Mercury" vs. "Strike"  
Combined Data (Idaho + Minnesota)  
1998



ONE-WAY AOV FOR: PSMERCO PSSTRCO

20000049

SOURCE	DF	SS	MS	F	P
BETWEEN	1	281.250	281.250	5.85	0.0179
WITHIN	78	3749.75	48.0737		
TOTAL	79	4031.00			

	CHI-SQ	DF	P
BARTLETT'S TEST OF EQUAL VARIANCES	0.15	1	0.6995

COCHRAN'S Q	0.5311
LARGEST VAR / SMALLEST VAR	1.1325

COMPONENT OF VARIANCE FOR BETWEEN GROUPS	5.82941
EFFECTIVE CELL SIZE	40.0

VARIABLE	MEAN	SAMPLE SIZE	GROUP STD DEV
PSMERCO	42.375	40	7.1457
PSSTRCO	46.125	40	6.7147
TOTAL	44.250	80	6.9335

CASES INCLUDED 80 MISSING CASES 0

Attachment B-2H

Plant spread (cm)  
AOV"Mercury" vs. "Strike"  
Combined Data (Idaho + Minnesota)  
1998

## LSD (T) COMPARISON OF MEANS

200000049

VARIABLE	MEAN	HOMOGENEOUS GROUPS
PSSTRCO	46.125	I
PSMERCO	42.375	.. I

ALL 2 MEANS ARE SIGNIFICANTLY DIFFERENT FROM ONE ANOTHER.

CRITICAL T VALUE	1.991	REJECTION LEVEL	0.050
CRITICAL VALUE FOR COMPARISON	3.0866		
STANDARD ERROR FOR COMPARISON	1.5504		

Attachment B-2I

Plant spread (cm)  
Comparison of means  
"Mercury" vs. 'Strike'  
Combined Data (Idaho + Minnesota)  
1998

24



OBJECTIVE DESCRIPTION OF VARIETY  
 GARDEN BEAN (*Phaseolus vulgaris* L.)

MERCURY

NAME OF APPLICANT(S) NOVARTIS SEEDS, INC.	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) PO Box 4188 Boise, IDAHO 83711-4188	PVPO NUMBER 200000049
	VARIETY NAME
	TEMPORARY OR EXPERIMENTAL DESIGNATION

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.    or    when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Measured data should be for SPACED PLANTS. Ranges should also be given. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used:

Please answer all questions for your variety; lack of response may delay progress of your application.

1. TYPE:

2

1 = Garden 2 = Snap 3 = Flageolet 4 = Romano

2. MARKET MATURITY:

55

Days to edible pods

1100

Heat units to edible pods

03

Number of days earlier than ....  8

.... Same number of days as ....  6

NONE LATER

Number of days later than ....

Comparison varieties

- 1='Tendercrop' 2='Kentucky Wonder'  
 3='Goldrush' 4='Slenderette'  
 5='Gitana' 6='Provider'  
 7='Bush Blue Lake 290' 8=Other (specify below)

STRIKE

3. PLANT:

06

cm Spacing between plants in a row

1

Habit

- 1=Determinate  
 2=Indeterminate, erect stem and branches  
 3=Indeterminate with weak and prostrate stem and branches  
 4=Indeterminate climbing habit with weak, long and twisted stem and branches

39

cm Height - AVG. TWO LOCATIONS

085

cm Shorter than .....

.... Same height as ....

04

cm Taller than .....

42

cm Spread AVG. TWO LOCATIONS

04

cm Narrower than ....

.... Same width as ....

06

cm Wider than .....

Use Comparison Varieties from Section 2.

Please make all 3 comparisons for Height and Spread.

#9 = INDY GOLD



## 3. PLANT: (continued)

☐ 3

Pod position 1=Low 2=High 3=Scattered

☐ 4

Bush form (illustrated below)



1=Spherical bush form



2=Stem bush form



3=Wide bush form



4=High bush form

5=Other (SPECIFY) \_\_\_\_\_

## 4. LEAVES:

☐ 1

Surface: 1=Dull 2=Glossy 3=Intermediate

☐ 2

Size: 1=Small ('Gitana') 2=Medium 3=Large ('Tendercrop')

☐ 2Color: 1=Light green (as light or lighter than 'Goldrush')  
2=Medium green  
3=Dark green (as dark or darker than 'Bush Blue Lake 290')

## 5. ANTHOCYANIN PIGMENT:

1=Absent 2=Present

☐ 1

Flowers

☐ 1

Stems

☐ 1

Pods

☐ 1

Seeds

☐ 1

Leaves

☐ 1

Petioles

☐ 1

Peduncles

☐ 1

Nodes

## 6. FLOWER COLOR AND DAYS TO BLOOM:

☐ 2

Color of standard

☐ 1

Color of wings

☐ 1

Color of Keel

☐ 40

Days to 50% bloom

## Flower Color Choices

1=White 2=Cream  
3=Pink 4=Lilac  
5=Purple 6=Blue  
7=Other (SPECIFY) \_\_\_\_\_

## 7. PODS (edible maturity):

☐ 1Exterior color  
(fresh)1=Light green (as light or lighter than 'Provider')  
2=Medium green  
3=Dark green (as dark or darker than 'Bush Blue Lake 290')  
4=Yellow ('Goldrush')  
5=Green-red variegated (horticultural)  
6=Other (SPECIFY) \_\_\_\_\_☐ 1

Processed pods (exterior color)

1=Light ('Tendercrop')

2=Dark ('Bush Blue Lake 290')

☐ 1

Dry pod color

1=Buckskin ('Sprite')

2=Green, persistent chlorophyll ('Hystyle')



## 7. PODS: (edible maturity): (continued)

- 3** Cross section pod shape (middle of the pod) 1=Flat 2=Heart (Pear) 3=Round 4= Figure eight
- 1** Creaseback 1=Present 2=Absent
- 2** Pubescence 1=None ('Slenderette') 2=Sparse 3=Considerable ('Provider' or 'Sprite')
- 1** Constriction (Interocular cavitation) 1=None 2=Slight 3=Deep
- 1 1** mm Spur length
- 3** Fiber 1=None ('Bush Blue Lake 290') 2=Sparse 3=Considerable ('Sprite')
- 6** Number of seeds per pod
- 2** Suture string 1=Present 2=Absent
- 2** Seed development 1=Slow ('Bush Blue Lake 290') 2=Medium 3=Fast ('Provider')
- 1** Machine harvest 1=Adapted 2=Not adapted

Percent sieve size distribution at optimum maturity for non-flat pods

4.76 to 5.76mm	5.76 to 7.34mm	7.34 to 8.34mm	8.34 to 9.53mm	9.53 to 10.72mm	≥ 10.72mm
2.92 %	5.15 %	10.48 %	41.41 %	40.03 %	0 %

3 Sieve	<b>1 3</b>	cm length	<b>0 8</b>	mm width	<b>0 8</b>	total mm thickness
4 Sieve	<b>1 5</b>	cm length	<b>0 9</b>	mm width	<b>0 9</b>	total mm thickness
5 Sieve	<b>1 5</b>	cm length	<b>1 0</b>	mm width	<b>1 0</b>	total mm thickness
6 Sieve	<b>  </b>	cm length	<b>  </b>	mm width	<b>  </b>	total mm thickness

## 8. SEED COLOR:

- 3** Seedcoat luster 1=Shiny 2=Dull 3=Semishiny 4=Variable
- 1** Seedcoat 1=Monochrome 2=Polychrome
- 0 1** Primary color 1=White 2=Yellow 3=Buff 4=Tan 5=Brown 6=Pink 7=Red 8=Purple 9=Blue 10=Black 11=Other (SPECIFY) \_\_\_\_\_
- Secondary color 1=White 2=Yellow 3=Buff 4=Tan 5=Brown 6=Pink 7=Red 8=Purple 9=Blue 10=Black 11=Other (SPECIFY) \_\_\_\_\_
- 1** Seedcoat pattern 1=Solid 2=Splashed 3=Mottled 4=Striped 5=Flecked 6=Dotted
- 2** Hilar ring 1=Absent 2=Present
- 0 2** Hilar Ring Color 1=White 2=Yellow 3=Buff 4=Tan 5=Brown 6=Pink 7=Red 8=Purple 9=Blue 10=Black 11=Other (SPECIFY) \_\_\_\_\_



## 9. SEED SHAPE AND SIZE:

200000049

☐ 1

Hilum view



1=Elliptical



2=Oval



3=Round

☐ 4

Cross section

1=Elliptical

2=Oval

3=Cordate

4=Round

☐ 1

Side view



1=Oval to Oblong



2=Round



3=Reniform

☐ 3 ☐ 3

gm/100 Seed

☐ 0 ☐ 4

gm/100 Seed lighter than .....

gm/100 Seed same as .....  
NOT THE SAME AS ANY OTHER☐ 0 ☐ 3

gm/100 Seed heavier than .....

☐ 1☐ 2☐ 3Use Comparison Varieties from Section 2.

Please make all 3 comparisons.

10. DISEASE RESISTANCE: 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant  
PLEASE SPECIFY RACE OR STRAIN WHERE APPROPRIATE☐Anthracnose (*Colletotrichum lindemuthianum*)☐

Race Alpha

☐

Race Beta

☐

Race Gamma

☐

Race Delta

☐

Race Epsilon

☐

Race Lambda

☐

Race Kappa

☐

specify race \_\_\_\_\_

☐Bean Rust (*Uromyces appendiculatus*)☐ 3

Race 38

☐ 3

Race 39

☐ 0

Race 40

☐ 0

Race 44

☐ 2

Race 45

☐ 0

Race 46

☐ 0

Race 49

☐ 0

Race 50

☐ 0

Race 51

☐ 3

Race 52

☐ 0

Race 54

☐ 0

Race 56

☐ 0

Race 59

☐ 3

specify race 72

☐Powdery Mildew (*Erysiphe polygoni*)☐Fusarium Root Rot (*Fusarium solani* f. sp. *phaseoli*)☐Pythium Root Rot (*Pythium* spp.)☐Aphanomyces Root Rot (*Aphanomyces euteiches*)☐Rhizoctonia Root Rot (*Rhizoctonia solani*)☐Pythium Blight or Aerial Pythium (*Pythium ultimum*)☐Angular Leaf Spot (*Isariopsis griseola*)☐Bacterial Wilt (*Corynebacterium flaccumfaciens* subsp. *flaccumfaciens*)



## 10. DISEASE RESISTANCE: (continued)

200000049

☒ Bacterial Brown Spot (*Pseudomonas syringae* pv. *syringae*)

☒ Common Bacterial Blight (*Xanthomonas campestris* pv. *phaseoli*)

☒ Halo blight (*Pseudomonas syringae* pv. *phaseolicola*) MINNESOTA FIELD RACE - UNKNOWN

☐ Race 1 ☐ Race 2 ☐ Other (SPECIFY) \_\_\_\_\_

☐ Clover Yellow Vein Virus (CYVV)

☐ Bean Common Mosaic Virus (BCMV)

☒ BV1 ☒ NY15 ☐ NL2 ☒ NL3

☐ NL4 ☒ NL8 ☐ Florida ☐ Idaho

☐ Mexican ☐ Western ☐ Type

☒ Other (SPECIFY) DOMINANT I gene resistance

☐ Yellow Bean Mosaic Virus (BYMV)

☒ Curly Top Virus (CTV)

☐ Other (Specify Disease and Race or Strain) \_\_\_\_\_

## 11. INSECT RESISTANCE: 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant

☐ Aphid ☐ Root Knot Nematode

☐ Leafhopper ☐ Seed Corn Maggot

☐ Lygus ☐ Thrips

☐ Pod Borer ☐ Weevils

☐ Other (SPECIFY) \_\_\_\_\_

## 12. PHYSIOLOGICAL RESISTANCE: 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant

☒ Heat ☒ Cold ☐ Drought

☒ Air Pollution ☐ Ozone

☐ Other (SPECIFY) \_\_\_\_\_

## 13. COMMENTS:



## EXHIBIT D

## ADDITIONAL DESCRIPTION

## 'Mercury'

'Mercury' is a fresh market shipper type snap bean, *Phaseolus vulgaris* L., which most closely resembles the variety 'Strike'.

When "Mercury" is seeded at Nampa, Idaho about June 1, average days to edible pods is 55 days. This is approximately 3 days earlier than 'Strike'. Maturity observations at other locations show similar, relative maturity differences between 'Mercury' and 'Strike'.

'Mercury' bush height averaged over two locations (20 plants/location) was 38.7 cm compared to 43.7 cm for 'Strike' (See attachment B-1G). Plant spread averaged over two locations was 42.4 cm and 46.1 cm for 'Mercury' and 'Strike' respectively (See attachment B-2G).

Pod placement is scattered on both 'Mercury' and 'Strike'. 'Mercury' has a high bush form compared to spherical for 'Strike'.

Both 'Mercury' and 'Strike' have similar intermediate surface, medium size, medium green leaves.

Anthocyanin pigmentation is completely absent in all plant parts of both 'Mercury' and 'Strike'.

'Mercury' has cream color floral standard while 'Strike' has white. Wing and keel floral color is white for both 'Mercury' and 'Strike'.

Both 'Mercury' and 'Strike' have light green exterior pod color and buckskin dry pod color.

'Mercury' has round, slightly creaseback, sparse pubescent, non-constricted, fibrous pods. These pods develop 6 seeds/pod without strings, 11 cm spurs with medium seed development and are adapted to machine harvest. 'Strike' has oval, non-creased, considerable pubescent, fibrous pods. The pods develop 6 seeds/pod without strings, 13 cm spurs with slow seed development and are adapted to machine harvest.

Pod length and diameter a similar for 'Mercury' and 'Strike'. 'Mercury' has larger seed (33g/100 seed) than 'Strike' (28g/100 seed). Seed shape and coloration are nearly identical.



Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) <i>Syngenta</i> Novartis Seeds, Inc. - <i>Vegetables</i>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  SB4136	3. VARIETY NAME  Mercury
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)  600 North Armstrong Pl. Boise, ID 83704	5. TELEPHONE (include area code)  (208) 322-7272	6. FAX (include area code)  (208) 378-6625
7. PVPO NUMBER  200000049		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company?  
If no, give name of country ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space): Exhibit E.11

Statement of the Basis of Application Ownership

The variety, Mercury (SB4136), is the result of a hand pollinated cross between BQ767-5 and BARC #10. The variety Mercury (SB4136) for which Plant Variety Protection is hereby sought was developed by Dr. Ron Riley employee of Novartis Seeds, Inc. By agreement between the employee and Novartis Seeds, Inc., all rights to any invention, discovery or development made by the employee while employed by Novartis Seeds, Inc. were assigned

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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2000000497

Exhibit E.11 (continued)

to Novartis Seeds, Inc. with no rights of any kind retained by the employees.

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## **EXHIBIT E**

### **STATEMENT OF THE BASIS OF APPLICATION OWNERSHIP**

The variety, Mercury (SB4136), is the result of a hand-pollinated cross between BQ767-5 and BARC #10. The variety Mercury (SB4136), for which Plant Variety Protection is hereby being sought, was developed by Dr. Ron Riley, an employee of Syngenta Seeds, Inc. – Vegetables. By agreement between employees and Syngenta Seeds, Inc.- Vegetables, all rights to any invention, discovery or development made by the employee while employed by Syngenta Seeds, Inc. – Vegetables are assigned to Syngenta Seed, Inc. – Vegetables with no rights of any kind retained by the employees.